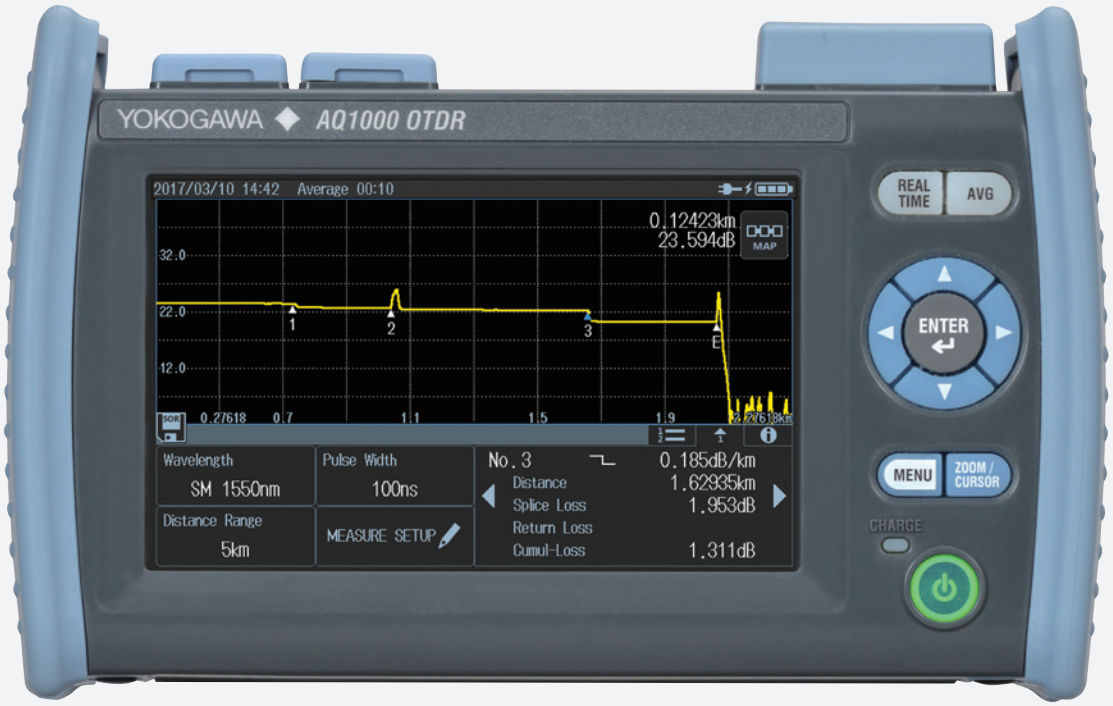
Test&Measurement

YOKOGAWA



Good things come in small packages

AQ1000
Optical Time Domain Reflectometer

Precision Making

Bulletin AQ1000-01EN

nbn Austria GmbH

Empower field technicians to make fast and precise measurements

At-a-glance

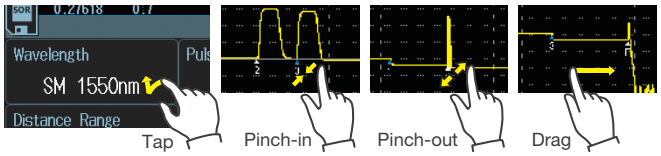
The AQ1000 satisfies test and measurement needs in analyzing access optical networks.

- **Wavelengths: 1310 / 1550 nm**
- **Dynamic ranges: 32 / 30 dB**
- **Size: 185 mm (W) × 116 mm (H) × 56 mm (D)**
- **Weight: 660 g**

Multi-touch touchscreen

Intuitive and responsive

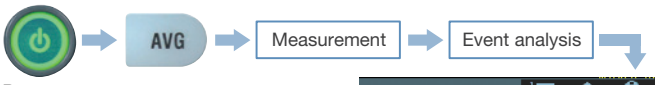
Tap, swipe, pinch or press. the high resolution, responsive 5.0-inch multi-touch capacitive touchscreen and hard-key buttons make OTDR operations simple and intuitive.



One-button measurement

Full-Auto

Simply pressing one singe button, the AQ1000 initiates an OTDR measurement, detects and comprehensively characterizes network events with PASS/FAIL judgment based on user-defined thresholds. The measurement data can be saved automatically if desired.

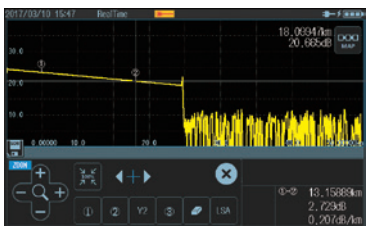


Event analysis result

No.	Dist.	Sl	dB/km	Type
1	0.70431	0.681	0.188	
2	1.01334	0.332	0.196	
3	1.62935	1.903	0.185	
L	2.03387		0.186	

Real-Time

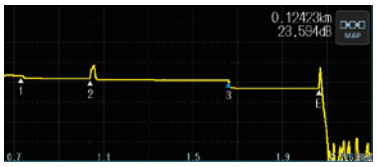
Simple and fast way to observe how the network connection looks like and make a Pass/Fail judgment of the network connection. The markers enables distance and loss measurements.



OTDR view modes

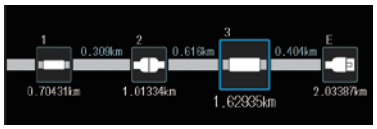
Trace view

Traditional view with OTDR waveforms and event markers.



Map view

Simple, icon-based map view for easy interpretation of network events.



Long battery operation time

Over 10 hours!

No worrying about running out of battery power during your daily work. The AQ1000's high capacity Li-Ion battery will last for 10 hours under the Telcordia standard conditions.

Quick boot-up

Under 10 seconds!

From completely OFF to measurement ready in under 10 seconds!

Built-in PC and LS, and VLS

Power checker (PC) (Integrated optical power meter)

Measures and displays optical power of incominglight for testing network performance.

Power checker (PC)

Light source (LS)

Outputs a stable, continuouswave/modulated light for measuring end-to-end attenuationaccurately when paired with an optical power sensor.

Light source (LS)

Visible light source (VLS)

Outputs red light for checking continuity of launch fibers or short fiber trunks. Breaks and bending in fiber can be identified visually.

(/VLS option is required.)

Visible light source (VLS)

Data handling features

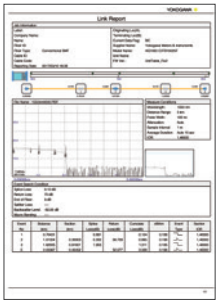
Direct data saving

Simply pressing “Direct save” icon, measured data can be saved in SOR or PDF format according to users’ prior selection.

Tap

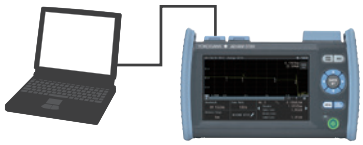
PDF reporting

Built-in post-processing software for generating OTDR reports in PDF format. Flexible configuration of report template to meet users’ report requirements.



Data Transfer

Data files or PDF report files that are stored in the AQ1000 can easily be transferred to a PC through a USB connection.


USB (Type-B)

Wireless LAN

The AQ1000 is capable of data transfer and remote control in cooperation with wireless LAN capable devices.


Wireless LAN

Wireless data transfer

The AQ1000’s data files can be transferred to a smartphone or tablet using the OTDR data transporter, or to PC using the OTDR Remote Controller software.

Remote control

The AQ1000 can be controlled remotely by a smartphone or tablet using a web browser and by a PC using a web browser or the OTDR remote controller.

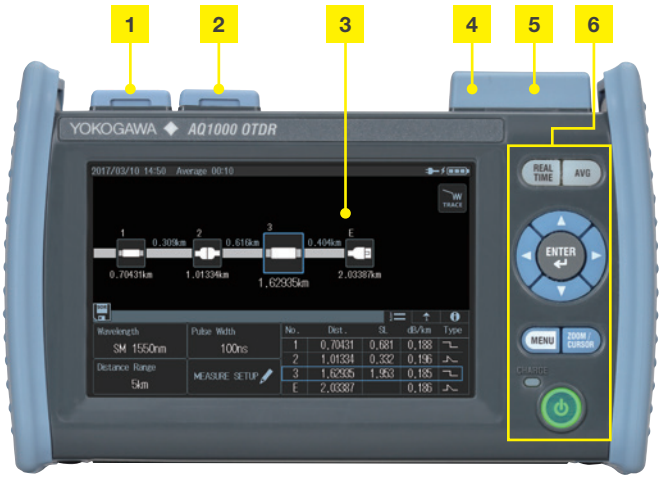
Note.

/WLN option is required. Please consult with our sales representatives for availability in your country.

The OTDR Data Transporter and the OTDR Remote Controller are a free application software.

Interfaces

1. USB port (Type micro B)
2. USB port (Type A)
3. 5.0-inch color LCD with capacitive touch-screen
4. VLS port (option)
5. OTDR port
6. Keys



USB power feeding

USB port is used for charging the battery of AQ1000.
No need to carry a bulky AC adapter anymore.

Note.

A USB power adapter is not included.
Please consult with our sales representatives for Yokogawa approved USB power adapters.

Multi language

Selection of display languages to assist users in operating the AQ1000 in their native language.

Measurement functions

- Distance measurement
- Loss measurement
- Return loss measurement (Total/Section)
- Auto event search
- Pass/Fail judgment

Specifications

OTDR

Items	Specifications
Wavelength (nm)*1	1310 ±20/1550 ±20
Applicable fiber	SM (ITU-T G.652)
Distance range (km)	0.2, 0.5, 1, 2, 5, 10, 20, 30, 50, 100, 200, 256
Pulse width (ns)	3, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, 5000, 10000, 20000
Sampling resolution	min. 5 cm
Number of sample points	max. 256000
Distance measurement accuracy (m)	±(1 m + Measurement distance × 2 × 10^{-5} ±1 sampling resolution)
Event dead zone (m)*2	≤ 0.8
Attenuation dead zone (m)*1, *3	4/5
Dynamic range (dB)*1, *4	32/30
Loss measurement accuracy	±0.03 dB/dB
Reflection accuracy	±2 dB
Laser class*5	Class 1M or 1

General specifications

Items		Specifications
Display*6		5.0 inch color TFT LCD WVGA (Capacitive touchscreen) Resolution: 800 × 480 pixel
External interfaces		USB2.0 × 2 (Type A × 1: Host, Type micro B × 1: USB mass storage devices, DC power supply)
		Wireless LAN (/WLN option): IEEE802.11b/g/n
Dimensions		185 mm (W) × 116 mm (H) × 56 mm (D) (excluding projections)
Weight		Approx. 660 g
Environmental conditions	Temperature	Operating: –10°C to 50°C, (10 to 35°C during charging, excluding a USB power adapter) (0 to 50°C when WLAN using) Storage: –20°C to 60°C
	Humidity	5 to 90%RH (No condensation)
	Altitude	4000 m or less
Power requirements		DC 5 V±10%, max. 1.5 A
Battery	Type	Lithium ion polymer
	Operating time	10 hours or more (Telcordia GR-196-CORE Issue 2, September 2010)
	Recharge time	5 hours (typical)
Laser safety		EN 60825-1: 2014, IEC 60825-1: 2007, GB 7247.1-2012, FDA 21CFR1040.10 and 1040.11
EMC	Emission	EN 61326-1 Class A, EN 55011 Class A Group1
	Immunity	EN 61326-1 Table2
Wireless	Wireless LAN (option)	EN 300 328, EN 301 489-1 and 17

Yokogawa's approach to preserving the global environment

- Yokogawa's electrical products are developed and produced in facilities that have received ISO14001 approval.
- In order to protect the global environment, Yokogawa's electrical products are designed in accordance with Yokogawa's Environmentally Friendly Product Design Guidelines and Product Design Assessment Criteria.

This is a Class A instrument based on Emission standards EN 61326-1 and EN 55011, and is designed for an industrial environment.
Operation of this equipment in a residential area may cause radio interference, in which case users will be responsible for any interference which they cause.

Power checker (Integrated optical power meter)

Items	Specifications
Wavelength setting (nm)	1310/1490/1550/1625/1650
Measurement range (dBm)	–50 to -5
Measurement accuracy (dB)*7	±0.5

Stabilized light source

Items	Specifications
Wavelength (nm)	1310 ±25/1550 ±25
Optical output level	–3 dBm ±1 dB
Output power stability (dB)*8	±0.05
Modulation mode	CW, 270 Hz, 1 kHz, 2 kHz
Laser class*5	Class 1M or 1

Visible light source (/VLS option)

Items	Specifications
Wavelength (nm)	650 ±20
Optical output level	–3 dBm or more (Peak)
Modulation mode	CW, 2 Hz
Laser class*9	Class 3R

*1: Typical. *2: Pulse width = 3 ns, Return loss ≥ 55 dB, at a 1.5 dB or less point from an unsaturated peak level. *3: Pulse width = 10 ns, Return loss ≥ 55 dB, at a point where the backscatter level is within ±0.5 dB of the normal level. *4: Pulse width = 10000 ns, Measurement time = 3 minutes, Sampling resolution = 8 m, SNR = 1. *5: Class 1M: IEC 60825-1: 2007, GB 7247.1-2012, Class 1: EN 60825-1: 2014 *6: The LCD may contain some pixels that are always ON or OFF (0.002% or fewer of all displayed pixels including RGB), but this is not indicative of a general malfunction. *7: CW, 1310 nm (with a spectral width of 10 nm or less), Optical input power 100 µW (–10 dBm), SM fiber (ITU-T G.652) with FC/PC connector, Wavelength setting: Measured wavelength ±0.5 nm, Excluding a secular change of equipment. (add 1% one year after calibration.) *8: For 5 minutes at a constant ambient temperature within 23°C ±2°C. *9: EN 60825-1: 2014, IEC 60825-1: 2007, GB 7247.1-2012

Note.
All the specifications are valid at 23°C ±2°C and after a warming up for 5 minutes or more, unless otherwise stated.

Model and suffix code

OTDR

Model	Suffix codes	Descriptions
AQ1000		AQ1000 OTDR
Optical connector	-USC	Universal Adapter (SC)
	-UFC	Universal Adapter (FC)
	-ASC	Universal Adapter (SC Angled-PC)
Visible light source	/VLS	Visible Light Source
Wireless LAN*	/WLN	Wireless LAN

*The use of wireless LAN is subject to the regulation of each country. For more detail, please consult with our sales representatives.

Accessories (Sold separately)

Model	Suffix codes	Descriptions
AQ7933		AQ7933 Emulation Software
	-SP01	Download version (1-license)
	-SC01	Package version (1-license with CD)
735482		Universal adapter (for OTDR port)
Optical connector	-FCC	FC
	-SCC	SC
A1590WL		USB cable for DC power supply, Length 1 m
B8105EP		Strap

NOTICE
- Before operating the product, read the user's manual thoroughly for proper and safe operation.
- Company names and product names appearing in this document are the registered trademarks of their respective companies.
- "Typical" or "Typ." in this document means "Typical value", which is for reference, not guaranteed specification.

3-Year Warranty

YOKOGAWA

https://tmi.yokogawa.com/ YMI-N-MI-M-E03

YOKOGAWA TEST & MEASUREMENT CORPORATION
Global Sales Dept. /E-mail: tm@cs.jp.yokogawa.com